

## CLAIMS

What is claimed is:

1. A hydrodynamic and hydrostatic hybrid bearing comprises:
  - a housing containing a lubricant;
  - 5 a bushing placed in the housing having a plurality of dynamic pressure generating grooves being penetrated to bushing for storing the lubricant; and
  - a shaft rotatably installed in the bushing;
  - wherein the lubricant produces hydrodynamic pressure between the grooves and the shaft when the shaft rotates relative to the bushing.
- 10 2. The hydrodynamic and hydrostatic hybrid bearing as claim 1, wherein the housing comprises a porous material for storing a lubricant.
3. The hydrodynamic and hydrostatic hybrid bearing as claim 1, wherein the housing is applied a pre-pressure for making the lubricant pass through the grooves and preserve between the bushing and the shaft.
- 15 4. The hydrodynamic and hydrostatic hybrid bearing as claim 3, wherein the housing further comprises a sealed unit to keep the pre-pressure.
5. The hydrodynamic and hydrostatic hybrid bearing as claim 4, wherein the sealed unit is a sealed glue.
6. The hydrodynamic and hydrostatic hybrid bearing as claim 1, wherein the bushing is a cylinder-shaped bushing.
- 20 7. The hydrodynamic and hydrostatic hybrid bearing as claim 1, wherein the dynamic pressure generating grooves is two pair of herringbone grooves.
8. The manufacturing method of the hydrodynamic and hydrostatic hybrid bearing comprises the following steps:
  - 25 forming a bushing;

processing a plurality of penetrated dynamic pressure generating groove on the bushing;

integrating the bushing into a housing containing a lubricant;

installing a shaft in the bushing; and

applying a pre-pressure to the housing and sealing the housing.

9. The manufacturing method as claim 8, wherein the bushing is a cylinder-shaped bushing.

10. The manufacturing method as claim 8, wherein the dynamic pressure generating grooves are processed by a cutting processing.

11. The manufacturing method as claim 8, wherein the dynamic pressure generating grooves are formed by an etching process.

12. The manufacturing method as claim 8, wherein the dynamic pressure generating grooves are formed by a plastic injection process.

13. The manufacturing method as claim 8, wherein the dynamic pressure generating grooves are two pairs of herringbone grooves.

14. The manufacturing method as claim 8, wherein lubricant produces a hydrodynamic pressure between the dynamic pressure generating grooves and the shaft when the shaft rotates relative to the bushing.

15. The manufacturing method as claim 8, wherein the housing contains porous material for storing the lubricant.

16. The manufacturing method as claim 8, wherein the pre-pressure makes the lubricant pass through the grooves and be kept between the bushing and shaft.

17. The manufacturing method as claim 8, wherein the housing is combined with housing by being inserted directly into the housing.

18. The manufacturing method as claim 8, wherein the bushing is combined with housing by extruding and sintering.